Java.util.GregorianCalendar Class in Java

**GregorianCalendar** is a concrete subclass(one which has implementation of all of its inherited members either from interface or abstract class) of a **Calendar** that implements the most widely used Gregorian Calendar with which we are familiar.

**java.util.GregorianCalendar vs java.util.Calendar**

The major difference between **GregorianCalendar** and **Calendar** classes are that the **Calendar** Class being an abstract class cannot be instantiated. So an object of the **Calendar**Class is initialized as:

**Calendar cal = Calendar.getInstance();**

Here, an object named cal of **Calendar** Class is initialized with the current date and time in the default locale and timezone. Whereas, **GregorianCalendar** Class being a concrete class, can be instantiated. So an object of the **GregorianCalendar** Class is initialized as:

GregorianCalendar gcal = new GregorianCalendar();

Here, an object named gcal of **GregorianCalendar** Class is initialized with the current date and time in the default locale and timezone.

**Fields defined :**

**GregorianCalendar** Class defines two fields:

**AD** : referring to the common era(***anno Domini***)

**BC** : referring to before common era(**Before Christ**)

**Constructors :** There are several constructors for **GregorianCalendar** objects. Broadly classifying, constructors for **GregorianCalendar** either initialize the object with the **user specified date and/or time in the default locale and time zone**, or initialize the object with **default date and time in the user specified locale and/or time zone**. These are as follows:

| **CONSTRUCTOR SIGNATURE** | **DESCRIPTION** |
| --- | --- |
| **GregorianCalendar()** | initializes the object with the current date and time in the default locale and time zone |
| **GregorianCalendar(int *year*, int *month*, int *dayOfMonth*)** | initializes the object with the date-set passed as parameters in the default locale and time zone |
| **GregorianCalendar(int *year*, int *month*, int *dayOfMonth*, int *hours*, int *minutes*)** | initializes the object with the date and time-set passed as parameters in the default locale and time zone |
| **GregorianCalendar(int *year*, int *month*, int *dayOfMonth*, int *hours*, int *minutes*, int *seconds*)** | initializes the object with the date and more specific time-set passed as parameters in the default locale and time zone |
| **GregorianCalendar(Locale *locale*)** | initializes the object with the current date and time in the default time zone and the locale passed as parameters |
| **GregorianCalendar(TimeZone *timeZone*)** | initializes the object with the current date and time in the default locale and the time zone passed as parameters |
| **GregorianCalendar(TimeZone *timeZone*, Locale *locale*)** | initializes the object with the current date and time in the locale and the time zone passed as parameters |

Methods **from()**, **toZonedDateTime()**, **getCalendarType()** were introduced in JDK 8.

|  |
| --- |
| // Java Program to show that Calendar class with  // default instantiation and GregorianCalendar class  // with default constructor is basically the same as both  // return the Gregorian Calender for the default  // date, time, time zone and locale    import java.util.Calendar;  import java.util.GregorianCalendar;    class CalendarGFG {      public static void main(String[] args)      {          // Creating an object of Calendar Class          Calendar cal = Calendar.getInstance();            /\* Creating an object of               GregorianCalendar Class \*/          GregorianCalendar gcal = new GregorianCalendar();            /\* Displaying Current Date using               Calendar Class \*/          System.out.println("Calendar date: "                             + cal.getTime());            /\* Displaying Current Date using               GregorianCalendar Class \*/          System.out.print("Gregorian date: "                           + gcal.getTime());      } // end of main function  } // end of class |

**Output:**

Calendar date: Sat Apr 28 13:36:37 UTC 2018

Gregorian date: Sat Apr 28 13:36:37 UTC 2018

**Example to demonstrate the usage of various constructors:**  
**1. Using default constructor**

|  |
| --- |
| // Java program to demonstrate simple GregorianCalendar  // operations  import java.util.Locale;  import java.util.TimeZone;  import java.util.Calendar;  import java.util.GregorianCalendar;    public class GregorianCalendarGFG {      public static void main(String args[])      {          // declaring an array to store month abbreviations          String month[] = { "Jan", "Feb", "Mar", "Apr",                             "May", "Jun", "Jul", "Aug",                             "Sep", "Oct", "Nov", "Dec" };            // declaring an array to store AM or PM          String amPm[] = { "AM", "PM" };            /\* Creating an object of GregorianCalendar class               using default constructor\*/          GregorianCalendar gcal = new GregorianCalendar();            // displaying the date, time, time zone and locale          System.out.print("Date: "                           + month[gcal.get(Calendar.MONTH)] + " "                           + gcal.get(Calendar.DATE) + ", "                           + gcal.get(Calendar.YEAR) + "\n"                           + "Time: "                           + gcal.get(Calendar.HOUR) + ":"                           + gcal.get(Calendar.MINUTE) + ":"                           + gcal.get(Calendar.SECOND) + " "                           + amPm[gcal.get(Calendar.AM\_PM)] + "\n"                           + "Time Zone: " + gcal.getTimeZone().getDisplayName()                           + "\n"                           + "Locale: "                           + Locale.getDefault().getDisplayName());      } // end of main function  } // end of class |

**Output:**

Date: Apr 30, 2018

Time: 10:21:51 PM

Time Zone: Coordinated Universal Time

Locale: English (United States)

**2. By passing year, month, dayOfMonth as parameters:**

|  |
| --- |
| // Java program to demonstrate simple GregorianCalendar  // operations  import java.util.Locale;  import java.util.TimeZone;  import java.util.Calendar;  import java.util.GregorianCalendar;    public class GregorianCalendarGFG {      public static void main(String args[])      {          // declaring an array to store month abbreviations          String month[] = { "Jan", "Feb", "Mar", "Apr",                             "May", "Jun", "Jul", "Aug",                             "Sep", "Oct", "Nov", "Dec" };            // declaring an array to store AM or PM          String amPm[] = { "AM", "PM" };            /\* Creating an object of GregorianCalendar class             by specifiying year, month and dayOfMonth \*/          GregorianCalendar gcal = new GregorianCalendar(2018, 3, 30);            // displaying the date, time, time zone and locale          System.out.print("Date: "                           + month[gcal.get(Calendar.MONTH)] + " "                           + gcal.get(Calendar.DATE) + ", "                           + gcal.get(Calendar.YEAR) + "\n"                           + "Time: "                           + gcal.get(Calendar.HOUR) + ":"                           + gcal.get(Calendar.MINUTE) + ":"                           + gcal.get(Calendar.SECOND) + " "                           + amPm[gcal.get(Calendar.AM\_PM)] + "\n"                           + "Time Zone: " + gcal.getTimeZone().getDisplayName()                           + "\n"                           + "Locale: "                           + Locale.getDefault().getDisplayName());      } // end of main function  } // end of class |

**Output:**

Date: Apr 30, 2018

Time: 0:0:0 AM

Time Zone: Coordinated Universal Time

Locale: English (United States)

**3. By passing year, month, dayOfMonth, hourOfDay, minute:**

|  |
| --- |
| // Java program to demonstrate simple GregorianCalendar  // operations  import java.util.Locale;  import java.util.TimeZone;  import java.util.Calendar;  import java.util.GregorianCalendar;    public class GregorianCalendarGFG {      public static void main(String args[])      {          // declaring an array to store month abbreviations          String month[] = { "Jan", "Feb", "Mar", "Apr",                             "May", "Jun", "Jul", "Aug",                             "Sep", "Oct", "Nov", "Dec" };            // declaring an array to store AM or PM          String amPm[] = { "AM", "PM" };            /\* Creating an object of GregorianCalendar class             by specifiying year, month, dayOfMonth,             hourOfDay and minute \*/          GregorianCalendar gcal = new GregorianCalendar(2018, 3, 30, 10, 21);            // displaying the date, time, time zone and locale          System.out.print("Date: "                           + month[gcal.get(Calendar.MONTH)] + " "                           + gcal.get(Calendar.DATE) + ", "                           + gcal.get(Calendar.YEAR) + "\n"                           + "Time: "                           + gcal.get(Calendar.HOUR) + ":"                           + gcal.get(Calendar.MINUTE) + ":"                           + gcal.get(Calendar.SECOND) + " "                           + amPm[gcal.get(Calendar.AM\_PM)] + "\n"                           + "Time Zone: " + gcal.getTimeZone().getDisplayName()                           + "\n"                           + "Locale: "                           + Locale.getDefault().getDisplayName());      } // end of main function  } // end of class |

**Output:**

Date: Apr 30, 2018

Time: 10:21:0 AM

Time Zone: Coordinated Universal Time

Locale: English (United States)

**4. By passing year, month, dayOfMonth, hourOfDay, minute, second:**

|  |
| --- |
| // Java program to demonstrate simple GregorianCalendar  // operations  import java.util.Locale;  import java.util.TimeZone;  import java.util.Calendar;  import java.util.GregorianCalendar;    public class GregorianCalendarGFG {      public static void main(String args[])      {          // declaring an array to store month abbreviations          String month[] = { "Jan", "Feb", "Mar", "Apr",                             "May", "Jun", "Jul", "Aug",                             "Sep", "Oct", "Nov", "Dec" };            // declaring an array to store AM or PM          String amPm[] = { "AM", "PM" };            /\* Creating an object of GregorianCalendar class             by specifiying year, month, dayOfMonth,             hourOfDay, minute and second \*/          GregorianCalendar gcal = new GregorianCalendar(2018, 3, 30, 10, 21, 51);            // displaying the date, time, time zone and locale          System.out.print("Date: "                           + month[gcal.get(Calendar.MONTH)] + " "                           + gcal.get(Calendar.DATE) + ", "                           + gcal.get(Calendar.YEAR) + "\n"                           + "Time: "                           + gcal.get(Calendar.HOUR) + ":"                           + gcal.get(Calendar.MINUTE) + ":"                           + gcal.get(Calendar.SECOND) + " "                           + amPm[gcal.get(Calendar.AM\_PM)] + "\n"                           + "Time Zone: " + gcal.getTimeZone().getDisplayName()                           + "\n"                           + "Locale: "                           + Locale.getDefault().getDisplayName());      } // end of main function  } // end of class |

**Output:**

Date: Apr 30, 2018

Time: 10:21:51 AM

Time Zone: Coordinated Universal Time

Locale: English (United States)

**5. By passing timeZone as parameter:**

|  |
| --- |
| // Java program to demonstrate simple GregorianCalendar  // operations  import java.util.TimeZone;  import java.util.Locale;  import java.util.Calendar;  import java.util.GregorianCalendar;    public class GregorianCalendarTest {      public static void main(String args[])      {          // declaring an array to store month abbreviations          String month[] = { "Jan", "Feb", "Mar", "Apr",                             "May", "Jun", "Jul", "Aug",                             "Sep", "Oct", "Nov", "Dec" };            // declaring an array to store AM or PM          String amPm[] = { "AM", "PM" };            /\* Creating an object of TimeZone class to create               an object of GregorianCalendar class to assign               an user defined time zone (GMT + 5:30)\*/          TimeZone tz = TimeZone.getTimeZone("GMT+5:30");          GregorianCalendar gcal = new GregorianCalendar(tz);            // displaying the date, time, time zone and locale          System.out.print("Date: "                           + month[gcal.get(Calendar.MONTH)] + " "                           + gcal.get(Calendar.DATE) + ", "                           + gcal.get(Calendar.YEAR) + "\n"                           + "Time: "                           + gcal.get(Calendar.HOUR) + ":"                           + gcal.get(Calendar.MINUTE) + ":"                           + gcal.get(Calendar.SECOND) + " "                           + amPm[gcal.get(Calendar.AM\_PM)] + "\n"                           + "Time Zone: " + gcal.getTimeZone().getDisplayName()                           + "\n"                           + "Locale: " + Locale.getDefault().getDisplayCountry());      } // end of main function  } // end of class |

**Output:**

Date: May 1, 2018

Time: 4:24:7 AM

Time Zone: GMT+05:30

Locale: United States

**6. By passing the locale as a parameter:**

|  |
| --- |
| // Java program to demonstrate simple GregorianCalendar  // operations  import java.util.TimeZone;  import java.util.Locale;  import java.util.Calendar;  import java.util.GregorianCalendar;    public class GregorianCalendarTest {      public static void main(String args[])      {          // declaring an array to store month abbreviations          String month[] = { "Jan", "Feb", "Mar", "Apr",                             "May", "Jun", "Jul", "Aug",                             "Sep", "Oct", "Nov", "Dec" };            // declaring an array to store AM or PM          String amPm[] = { "AM", "PM" };            /\* Creating an object of Locale class to create               an object of GregorianCalendar class to assign               an user defined locale (India)\*/          Locale l = new Locale("en", "IN");          GregorianCalendar gcal = new GregorianCalendar(l);            // displaying the date, time, time zone and locale          System.out.print("Date: "                           + month[gcal.get(Calendar.MONTH)] + " "                           + gcal.get(Calendar.DATE) + ", "                           + gcal.get(Calendar.YEAR) + "\n"                           + "Time: "                           + gcal.get(Calendar.HOUR) + ":"                           + gcal.get(Calendar.MINUTE) + ":"                           + gcal.get(Calendar.SECOND) + " "                           + amPm[gcal.get(Calendar.AM\_PM)] + "\n"                           + "Time Zone: "                           + gcal.getTimeZone().getDisplayName()                           + "\n"                           + "Locale: " + l.getDisplayCountry());      } // end of main function  } // end of class |

**Output:**

Date: Apr 30, 2018

Time: 10:58:30 PM

Time Zone: Coordinated Universal Time

Locale: India

**7. By passing timeZone and locale as parameters:**

|  |
| --- |
| // Java program to demonstrate simple GregorianCalendar  // operations  import java.util.TimeZone;  import java.util.Locale;  import java.util.Calendar;  import java.util.GregorianCalendar;    public class GregorianCalendarTest {      public static void main(String args[])      {          // declaring an array to store month abbreviations          String month[] = { "Jan", "Feb", "Mar", "Apr",                             "May", "Jun", "Jul", "Aug",                             "Sep", "Oct", "Nov", "Dec" };            // declaring an array to store AM or PM          String amPm[] = { "AM", "PM" };            /\* Creating an object of TimeZone class and Locale               class to create an object of GregorianCalendar               class to assign an user defined time zone               (GMT + 5:30) and locale (India)\*/          TimeZone tz = TimeZone.getTimeZone("GMT+5:30");          Locale l = new Locale("en", "IN");          GregorianCalendar gcal = new GregorianCalendar(tz, l);            // displaying the date, time, time zone and locale          System.out.print("Date: "                           + month[gcal.get(Calendar.MONTH)] + " "                           + gcal.get(Calendar.DATE) + ", "                           + gcal.get(Calendar.YEAR) + "\n"                           + "Time: "                           + gcal.get(Calendar.HOUR) + ":"                           + gcal.get(Calendar.MINUTE) + ":"                           + gcal.get(Calendar.SECOND) + " "                           + amPm[gcal.get(Calendar.AM\_PM)] + "\n"                           + "Time Zone: "                           + gcal.getTimeZone().getDisplayName()                           + "\n"                           + "Locale: " + l.getDisplayCountry());      } // end of main function  } // end of class |

**Output:**

Date: May 1, 2018

Time: 4:34:59 AM

Time Zone: GMT+05:30

Locale: India